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Sizing and Grading of Coke

To the recent "Fuel and the Future" conference a very important contribution was made by Mr. F. A. H. Elliot, director of the Combustion Appliance Makers' Association. We have often stressed the futility of changing over to the uses of a fresh type of fuel in a furnace designed to use a different type, without radical modification. Thus a furnace specially designed to work with town's gas, if changed over to burn oil, will not be be an efficient piece of plant unless it is expertly modified. This state of affairs applies with equal force to coal-burning appliances, wherein maximum efficiency is only reached when the apparatus uses the type of fuel which the designer had in mind when he created it. This aspect has long been realised, for several years before the war the C.A.M.A. caused a survey to be made in order to ascertain the availability of the fuels normally used in the apparatus. It was found that no fewer than 270 names or combinations of names were in use to indicate sizes, and that 340 different sizes of coal were being marketed. Availability at one time was connected with price, but to-day, such conditions no longer obtain and therefore Mr. Elliot made a strong plea to the Coal Board to check up on their nomenclature and to disclose how much of each size for each district—or perhaps the ratio—which would be available for combustion in the fields covered by their activities. This would enable designers to correlate average size of fuel with fuel efficiency. It seems that the price-fixing arrangements undertaken in recent years, have made hay-wire of earlier attempts at efficiency. Moreover, an examination of statistics issued by the Ministry of Fuel and Power, because of nomenclature, is not of any great value, but one rather startling factor revealed was that the tonnage of house coal has declined from 45 million tons in 1940 to 29 million in 1945. Apparently, Mr. Elliot was discussing a report (which we have not seen) on the Grading and Sizing of Coal, and very neatly he summarised the existing situation in the following terms:

> Now the organisers of this conference have wisely decided that the grading and sizing of coal shall be discussed at a joint session where four main groups of delegates, each of them with a vital interest in the subject, can come together. What are those interests?
>
> (1) *Coal consumers.*—Consumers find it difficult to specify their individual requirements owing to existing confusion in nomenclature and description, and are pressing that there should be a revision of price structure with size as its basis.
>
> (2) *Coal producers.*—The reorganisation of production is now proceeding, and the collieries require to know what sizes will be demanded by post-war industry.
>
> (3) *Coal distributors.*—Coal distributors are most competent to ensure proper distribution. They need to know what grades and sizes of fuel are to be made available in their efforts to ensure suitability of supply.
>
> (4) *Appliance makers.*—The manufacturers of those appliances in which the coal is consumed, whether this is by modern domestic convector fire or the super-sub-station, are concerned to know the sizes, ranges and tonnages available so that they may design and plan production to satisfy the requirements of consumers of all grades which are in supply.
>
> I want to elaborate in my remarks the attitude and policy of this fourth group—the appliance manufacturing industry. The appliances made by members of my association are designed for the use of solid fuel, and in nearly all cases the higher efficiencies and most satisfactory results are only obtained when the fuel used is of a suitable size. We are at present faced with a difficulty that there is no standard nomenclature whereby the size of coal can be defined, and I want to prove to you that *unless* the production

(Continued overleaf, foot of column 2.)

Contents

Sizing and Grading of Coke, 229.—Notes from the Branches, 230.—Heat-treatment of Aluminium Alloys, 230.—Vitreous Enamellers' Association, 230.—Coneygre Foundry, 231.—British Steelfounder' Technical Convention, 237.—Cupola Practice, 239.—A French Non-ferrous Foundry, 240.—Current Comments, 241.—House Organs, 243.—Publications Received, 244.—Forthcoming Events, 244.—German Technical Reports, 244.—Will Metal Prices Crack? 245.—Imports and Exports of Iron and Steel, 245.—Personal, 247.—Control of Iron and Steel, 247.

NOTES FROM THE BRANCHES

SCOTTISH.—The opening meeting of the Scottish branch was held in the Royal Technical College, Glasgow, recently. Mr. Alex. Marshall, the retiring president, was in the chair, and past-Presidents of the Institute, Mr. John Cameron and Mr. Daniel Sharpe, were amongst the 100 or so people who were present. Mr. Marshall introduced Mr. Tom Shanks, the new branch president, and assured him he would be well supported by the members during the coming session. Mr. Shanks was a vice-president of the Scottish branch at the outbreak of war. As a "Territorial" officer he served in France in the early days of the war. He was taken prisoner at Dunkirk, and was relieved during the advance on Germany in the spring of 1945. During all his stay in Germany, Mr. Shanks retained the vice-presidency of the branch, whose members looked forward to his becoming the first post-war president.

After returning thanks for his election, Mr. Shanks congratulated Mr. Allan McCreadie, Glasgow, and Mr. John Steele, Wishaw, who had respectively been awarded the "Sir Archibald McInnes Shaw" prizes for pattern-making and foundry practice at the Stow College, Glasgow, last session. He congratulated the branch on the fact that two of its members had been awarded Institute Diplomas for Papers read in Glasgow and Falkirk, and on his invitation, Mr. Sharpe presented the diplomas to Mr. P. Cook and to Mr. D. H. Young.

After Mr. Shanks had read his presidential address, Mr. Thomas H. Sneddon, Motherwell, read his Paper on "The Influence of Design and Pattern-making on Foundry Technique, and the Development of Competitive Methods of Production of High Duty Castings," for which he was awarded the "John Surtees Memorial" Gold Medal in March, 1946.

Mr. Sneddon's Paper will appear in a future issue.

HEAT-TREATMENT OF ALUMINIUM ALLOYS

A film depicting British technique in the heat-treatment of aluminium alloys has been very well produced for the Aluminium Development Association by the Film Producers' Guild. The film, which runs for 18 minutes, opens with the recapitulation in a modern laboratory of the initial discovery of age hardening made in Germany by Alfred Wilm. A simplified explanation is given, with the aid of animated diagrams to cover the mechanism of age hardening, hardening by cold working, and of annealing. This is followed by a description of the practical aspects of heat-treatment, the layout of furnaces and quenching tanks, and the types of furnaces actually used are illustrated.

Copies of the film (in both 35 mm. and 16 mm. sizes for sound projectors only) may be borrowed, free of charge, by technical colleges and similar bodies for projection in their own theatres. Applications for the loan of this or other films in the collection should be addressed for the attention of the librarian of the Association, 67, Brook Street, London, W.1.

VITREOUS ENAMELLERS' ASSOCIATION

At a meeting of the Vitreous Enamellers' Association, held at the Midland Hotel, Birmingham, on October 31, Mr. H. Whitacker, M.Sc., the chairman, reviewed the 10-year-old history of the Association, and outlined the policy for the future. Up to now, the Association had catered for the jobbing enameller only. Its 24 members had been divided into sections to regulate all matters specifically pertaining to the products in the individual sections. For instance, in the cast iron section, all phases of the enamelling of cast-iron components; and in the sheet iron section, reflectors, gas and electric cooker linings, etc., were dealt with. The Association had, and was at the moment, actively engaged in ensuring for the industry essential supplies. Titanium oxide was a case in point where steps were being taken in conjunction with the supply departments to overcome a serious bottleneck. To keep in step with the housing programme, co-operative action was being taken to obtain priority in the supply of equipment. In these days of standardisation it was essential that adequate employer representation should be obtained in matters affecting their products. Thus the Association was working in close co-operation with such bodies as the British Standards Institution, the British Colour Council and the Institute of Vitreous Enamellers. Perhaps the most important outcome of their Association was the practical help they had been able to accord each other during times of difficulty.

The time had arrived, however, when it was obvious to all that the Association must be expanded to meet existing and future requirements. Thus, to this meeting there had been invited a large number of new members, thoroughly representative of the firms which operated in connection with their finished products, a vitreous enamelling department. The support of these firms was essential if this industry was to be placed on a proper foundation. Thus, for the enlarged association, there would have to be inaugurated an adequate research programme, and steps would have to be taken to popularise their products. The industry was in competition with stainless steel and other finishes, which were well backed up by national publicity campaigns.

The chairman's speech was well received, and the meeting proceeded to the formal business of electing an enlarged council and transacting other business.

Sizing and Grading of Coke

(Continued from previous page.)

programme of the coal industry and development of the appliance industry go hand in hand it is useless to talk about fuel efficiency.

Thus, the situation is clear, foundries responsible for the design of apparatus destined to burn coal, require as a first pre-requisite reliable data as to the material to be consumed and its future availability. Here is a real chance for the new Coal Board to prove its worth.

CONEYGRE FOUNDRY

By VINCENT C. FAULKNER

Unless it be associated with true progress, there is no particular virtue in a firm being of historic foundation. Yet there must be a real feeling of satisfaction to be associated with Coneygre Foundry, as not only does it date from the inception of the industrial era, but to-day, in a number of directions, it is in advance of its contemporaries. The founder is said to be Dud Dudley, which implies that castings have been made within the precincts of the foundry for more than 300 years. To-day, the foundry is working on repetition lines, mainly for the motor-vehicle industry, and the lighter types of machine tools.

In its early days, the works engaged in bellfounding, and, like Bassigny in Lorraine, was the centre for the teaching and supply of nomadic bellfounders. The foundry remained continuously in the Dudley family until about 30 years ago. With the inception of the motor industry, Coneygre Foundry became the source of supply for automobile cylinders. To-day, the concern employs about 600 people, of whom some 180 are girls.

Layout

The general scheme of working is that the foundry, which is of rectangular shape, is divided along its major length into bays. The bay nearest to the canal which runs by the side of the foundry is the fettling shop. Then, divided by a wide service gangway are a series of nine self-contained working places. One of these has been described in considerable detail by Mr. A. Wood in the FOUNDRY TRADE JOURNAL for March 2, 1944, under the title of "A Small Moulding Unit." The system is carried under the numbers 10 to 13 in the next bay,

FIG. 1.—THE HANDLING OF RAW MATERIALS FROM WAGONS TO STOCK BUNKERS.

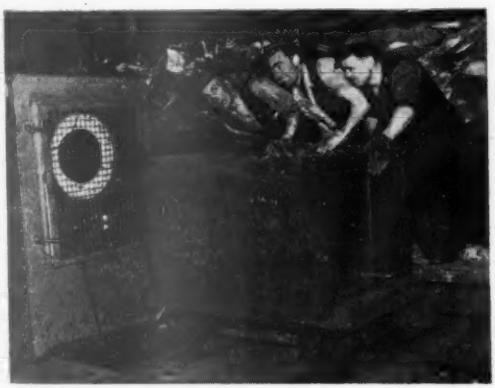


FIG. 2.—SYSTEM OF LOADING.

the balance being taken up by individual green sand moulding.

Next, in order, is the fully-mechanised core shop, whilst the shop is completed by the dry sand bay, and includes a section wherein the heavy moulding machines are automatically serviced for sand supply and mould removal. At the ends of the shop there are melting plants. Exterior to the foundry are—as a prolongation of the fettling bay—the inspection and despatch department; the pattern shop; the sand drying shop; the laboratories and offices. The cupolas at both ends are connected by sidings to the main-line railway. Around the foundry there is ample land for extensions.

Melting Practice

Though there are seven cupolas available, two at one end of the foundry and five at the other, it is proposed only to deal with the pair, as these represent an interesting phase in modern practice. The great open space surrounding the foundry provides ample storage ground for the raw materials in reserve.

Coneygre Foundry

The method of working, however, is to unload the pig-iron and scrap from the incoming wagons by a magnet crane, or in the case of coke, by loading a drop-bottom skip, and by these means fill bunkers. For the

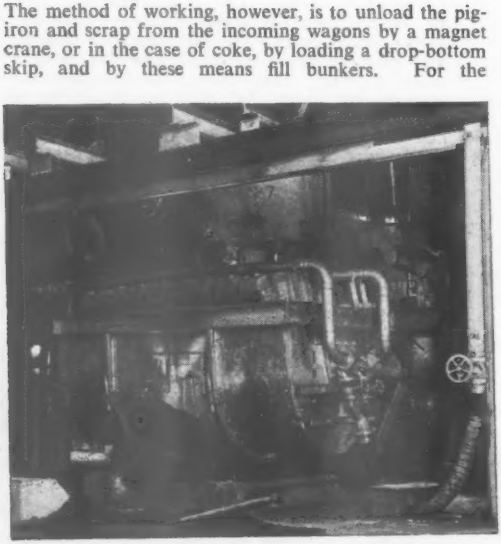


FIG. 3.—SHOWS THE TYPE OF RECEIVER USED. NOTE THE STICK OF GRAPHITE USED FOR INOCULATION.

metallic raw materials, the bottoms of the bunkers are made up of inclined planes made from steel rails, giving a suitable angle of repose. In front of these grids there is a trench which permits the operatives to transfer, working at bench height, the pig and scrap to a skip mounted on the platform of an Avery self-indicating weighing machine running on rails. The requisite amount of metallic materials being weighed, the scale car is moved beneath the coke hopper, where by opening a clam shell closure, the fuel is added to make up a ton charge. The normal proportions are 17 per cent. pig-iron, 15 per cent. steel, 45 per cent. domestic cylinder quality, and 13 per cent. coke.

The charge is carried up an inclined plane and automatically dumped into the cupola. The cupolas are lined to yield an 8 to 10 ton per hour output. They are fire-brick lined and have twelve 4-in. dia. circular main tuyeres and twelve auxiliary ones of 1-in. dia. These are placed above, intermediary and run along one plane, that is to say, they are not staggered as in the case of the balanced blast system. Additionally, there are kindling tuyeres as a contributory factor in initial control. The furnaces, which were made by the Constructional Engineering Company, Limited, are blown by a Keith Blackman fan, controlled so as to give 5,000 cub. ft. per min. at 24 in. w.g. They carry a 2-ft. deep blanket of slag; this is done with the object of thoroughly washing the liquid metal. The melting, once started, is continuous, and no botting up is carried out, but the stream is started and stopped by fan control. The slag hole, which is always open, discharges into a 30-cwt. ladle, located at foundry floor level, which involves a considerable drop, as the cupola is mounted on a 12-ft. high platform. Just a little sand is placed on the bottom of the slag ladle, and the conditions are such that the mass cools very slowly. This is of major importance because, owing to this, the slag is converted from a glass to a rock, and thereby becomes a marketable material. Thus, instead of having to pay for the removing of the slag from the yard, the position is reversed, and now road-making contractors send their lorries to the works, break up the lumps, cart it away, and pay for the product. Mr. J. J. Sheehan, the managing director, will be pleased to give any additional information to any foundry executives who may be interested in making this saving.

In clear view of the furnaceman is a Metronic automatic volume and pressure meter. The system operated is such that the metal leaves the furnace at a temperature of 1,540 deg. C. The writer has never seen hotter metal leaving a cupola. Despite this the patching used is only of the order of 67 lb. per ton, as against an average of about 60 for the whole country.

The metal runs into a town's gas-fired tilting receiver

FIG. 4.—SAND DISTRIBUTION PLATFORM ABOVE CORE SHOP.

of 4 tons capacity. Actually the gas is only used for the initial warming-up, and at the mid-day break. Rectangular in shape, the hearth of the furnace is lined with crushed silica brick; the walls are of silica brick, whilst the roof is of the suspended arch type carrying silimanite bricks. The whole structure, which was made by Burdon Furnaces, Limited, has given excellent life. Above and in front of the tap-hole, there is welded to the body of the furnace, a vertical steel tube. Loosely sliding within this a 2-in. graphite electrode resting on the launder bottom. The object of this is, of course, the inoculation of the metal. The spout terminates in a bridge for holding back any small amount of slag which may be formed in the receiver. The metal is poured into 6-cwt. capacity Roper ladles. These are lidded and suspended from monorails. The tilting of the furnace is operated by a youth in a cabin situated just across the gangway and directly opposite to the furnace. He is protected from the glare of the metal by a cobalt blue pane of glass. At his side is the metal control bench. Here a chill wedge test is carried out at frequent intervals throughout the day.

FIG. 5.—FINISHING SECTION AND CORE SHOP.

FIG. 6.—VIEW OF CORE CONVEYOR.

Sand Preparation

The main source of the sand supply is the knock-out. The sand falls through a 1-in. grating, where the dust is kept in control by a suction fan situated a foot above this grid.

At the base of the knock-out is a 24-in. belt running between 14-ft. centres. This spills onto an elevating belt, which feeds a 5-ft. by 4-ft. vibrating screen of ¼-mesh. It is then freed from tramp iron by passing beneath a Rapid magnetting machine. The sand is then conveyed outside the foundry to fill a 100-ton storage hopper. This is provided with many poke holes so that should sticking ever be encountered it could be cleared. The base of this hopper is nearly closed by a revolving plate, and from this the sand is ploughed off to supply, through hoppers, a pair of August-Simpson mills. On this belt the clay bond and coal dust are added, whilst water is metered out at the mill. The sand is next taken up by an inclined belt to feed a conveyor spanning four machines, supplied through straight and angle-sided hoppers, having the usual clam shell closures. Most of the sand, however, is made for the dry sand foundry. The four machines so serviced with sand are Pneulec jolt ram turnovers,

Coneygre Foundry

and are engaged on the heavier type of work. The moulds made are handled on quite a network of roller conveyor paths, which gives ample space for coring up and closing after drying. The dry sand foundry is completed by six working places, some of which carry pairs of moulding machines. The general transport of this section is undertaken by three 5-ton Morris overhead electric travelling cranes. The drying stoves are the standard type of August.

FIG. 7.—CORE INSPECTION AND ASSEMBLY.

Green Sand Foundry

The green sand foundry, which is separated from the dry sand section by the core department, receives its facing sand from August sand mills located at the opposite end of the shop to the cupola plant detailed. The backing sand is reconditioned in the working places by Pneulec Royer machines. The facing sand reaches the mould places in stillages, transported by either Reliance or Douglas runabouts. To save excess manœuvring or waiting around the mills, use is made of a Tug Lift. This useful gadget consists of an upright, terminating in a ball, and mounted on wheels to be instantaneously inserted in a socket beneath the stillage and so provide the necessary extra wheels for man-handling. Naturally, in such a foundry resort has been had to many types of moulding machine, and there are large numbers of British Moulding Machines, Stone-Wallwork, and Nicholls. Some of the moulds made carry an easily clamped-on cover, instead of weights.

Core-making

The incoming sand is dried in a town's gas-fired rotary kiln, housed in a quite separate building. This furnace has recently been carefully insulated externally, and a noteworthy reduction in gas consumption has resulted. The sand is taken by suction to a position in the rafters of the shop where it is dischargeable into Fordath Engineering Company, Limited's mills built on a bridge running virtually the whole length of the shop. Carefully measured quantities of oil are metered out automatically in the mills. Each batch is discharged into wheeled boxes, and, by them, some dozens of hoppers installed over the core benches are kept full. Most cores are made by girls using metal core boxes, but some of the heavier ones call for male labour. Good use is made of a Titan core blower for the rapid production of mass-produced lines. The green cores are loaded on to a pendulum conveyor which transports them to either of two Bagshawe continuous stoves. After one or two cycles, depending on size, the cores are transferred to a steel band conveyor along which they are inspected. At the end they are removed for blacking and jointing, and loaded on to a second steel band conveyor for drying in an Acme continuous

FIG. 8.—VIEW OF TAPPET FOUNDRY.

stove. The finished cores are stored on racks, and, as required, are taken by trays on stillages to the working places.

Along the boundaries of the working places are the portions of the roller conveyor reserved for casting up. This means the castings can be easily loaded up for transport to the cleaning lines. These start at the "main" cupola end of the foundry with a shot-blast room for the heavier types of casting. Next there is a worthwhile piece of plant to which the attention of the industry should be drawn. It is a Tilghman shot-blast furnished with the Traughber system of wet dust collection. It is proposed later to give a detailed description of this plant. Next in the line is a shot-blast tumbling barrel followed by swing and double-ended grinders, all properly fitted with dust extraction.

Control and Inspection

An excellent system of control is imposed throughout. Primarily, the metallic raw materials are checked regularly for silicon and carbon, with periodic tests for the other elements. Then there are the chill tests taken for routine control at the furnaces. The results obtained are constantly and prominently displayed for all to see. Practically all metal has to comply with B.S.I. specifications.

Sand control occupies a specially prominent place in the organisation, and well-equipped laboratories not only carry out routine tests, but research work on the subject is constantly being undertaken.

Of equal importance in giving satisfactory service to customers is the pattern inspection. In a special department, all patterns before going into production are passed by a panel consisting of the chief inspector, the foreman pattern-maker, the foundry foreman, and an outside technical man. At the meetings of the panel, decisions are taken as to the most appropriate methods of moulding and manufacture, whether repairs or alterations to the pattern are necessary. Next, there is a meticulous inspection of the cores for dimensional accuracy, and finally, both before and after cleaning, there are further inspections. There is a special department located between the fettling and despatch. For the long runs of cylinder blocks and the like, special jigs have been installed for gauging all dimensions and to ensure that no faulty casting is delivered to the customer.

FIG. 9.—DESPATCH STORE.

FIG. 10.—VIEW OF INSPECTION DEPARTMENT.

Despatch

There are two loading bays, the layout of which allows lorries to back in and be serviced by overhead cranes. The restrictions at present imposed on the operation of road transport is found to be very disadvantageous to the economic working of this, as with all similar concerns.

Welfare

The canteen which the firm provides is well supported, and many of the employees resort there in the evenings to enjoy a game of cribbage or darts, and for these, in this district, the works are organised into leagues. There are periodic dances and a Christmas party for the children of the operatives. Additionally, there is a bowling green. Amenities for the staff are under constant considera-

Coneygre Foundry

tion by the directorate with a view to their extension. For first-aid work, a fully trained nurse is in constant employment.

Programme Control

When a foundry works for the motor-vehicle industry, there is real need for a close control to be kept on the production programme, and order book loading. At Coneygre this is done in duplicate by means of charts displayed in the offices of both the managing director and the sales manager. Here, by means of coloured celluloid tabs, the time-loading on every working place is shown at a glance. At the moment, everyone is shown to be well occupied for many months to come, but sudden changes in design, as is more common in the automobile industry than the layman would imagine, calls for a strict watch to be kept on production programmes.

Acknowledgments.—The Author desires to express his gratitude to Mr. J. J. Sheehan, B.Sc., the managing director of Coneygre Foundry, Limited, and to Mr. John Hird, for the help given in the preparation of this article.

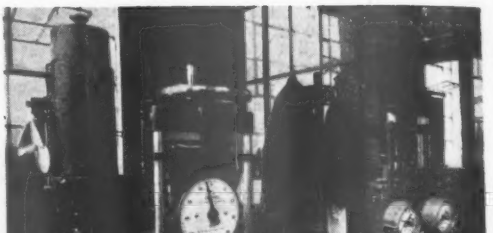


FIG. 11.—SANDS LABORATORY EQUIPMENT.

FIG. 12.—CHEMICAL LABORATORY.

THE AUTOMOBILE MANUFACTURERS' ASSOCIATION reports that employment and dollar pay-rolls in the motor-car industry have reached an all-time high level for peace-time operations. The industry's auto, body and parts plants are paying 36,000,000 dollars weekly to 699,000 hourly-rated workers, an increase of 76 per cent. in dollar payments, and 25 per cent. in the number of workers over January, 1941.

SIR RONALD WEEKS, deputy-chairman of Vickers, Limited, and chairman of the English Steel Corporation, Limited, together with Major Kilner, deputy-chairman of Vickers-Armstrongs, Limited, and other officials of the group, left by air last week to renew contacts with their overseas interests, principally in South Africa, and also to demonstrate the Vickers Viking aircraft in which they travelled.

BRITISH STEELFOUNDERS' TECHNICAL CONVENTION

MR. BASIL GRAY'S ADDRESS

Speaking as chairman of the main technical committee, MR. GRAY said that the formation of the B.S.F.A. technical committee was the logical outcome of a gradual change in the outlook of managements from a strict isolationism in the matter of divulging their methods or opening their shops to visitors, to a point of view that recognised the futility of such secrecy, and that any advantages gained from a few more or less exclusive methods, were more than offset by the resulting ignorance as to the methods of their competitors. Such a state of affairs was liable to engender an unwarranted complacency and absence of self criticism that stultified real progress.

During the first world war, chinks appeared in the "iron curtain" that had surrounded many foundries up to that date, and between the wars a number of foundries were more and more ready to exchange information and assistance with their competitors.

During the last war, the curtains were thrown right back and the benefits that were experienced from the unrestricted exchange of information that took place among those dealing with bombs and tank castings, was so marked that little, if any, opposition was encountered to the setting up of a technical organisation, and the encouragement and support that has since been given by the industry was well illustrated by the gratifying attendance at the convention.

Functions of the Committee

The design of the organisation that would best further this drive to efficiency was, naturally, given much thought in the light of the objects in view, which might be classified as follows:—

(1) The fullest possible co-operation and discussion on their common problems between the maximum number of individuals.

(2) Surveys of the plant used, and its difficulties and weaknesses.

(3) Management problems, such as maintenance, planning, ratefixing, etc.

(4) Surveys of the day-to-day technical problems of all kinds associated with pattern-making, moulding, steel-making, running, heading and dressing and, in addition, good house-keeping.

(5) Controlled experiments to elucidate points of importance brought to light by the surveys mentioned.

All the activities mentioned were within the province of the regional committees, as the main technical committee was merely there to co-ordinate and direct the work, and to be the means whereby outside scientific and technical assistance might be obtained. Up to the present time, much work of the kind mentioned under the first three headings had occupied the regional committees, and several preliminary surveys had been completed, so that the absence of satisfactory arrangements whereby the main committee could call on outside technical and scientific assistance, while restricting activities, had not been too serious.

Immediate Requirements.

In the first place, a technical staff was required to assist members who undertook controlled investigations into matters of interest arising from preliminary surveys. It was essential that all the conditions of experiment were rigidly controlled and recorded, if full benefit was to be obtained, and few firms had men they could spare to give the necessary time.

Secondly, a staff was required capable of writing up reports of all kinds, for circulation to the industry or for publication, and also to obtain specialist information from experts outside the industry or from published work. A technical staff was also required to supervise and co-ordinate work in outside institutions on a laboratory scale, supplementing the practical work in the shops already mentioned. It was generally agreed that such an organisation was necessary, and there could be little doubt that it would be provided in the near future by one means or another. Some assistance had been obtained from the B.I.S.R.A., who had taken over research from the Iron and Steel Institute, particularly from the sand and refractories committee of the B.I.S.R.A., which, under Dr. Rees, had helped much on the question of substitutes for silica paint, but far too great a load was thrown on the main committee and, particularly, the regional chairmen. A great deal of work was, inevitably, attached to that position, and it was unfair to ask them to take on such additional duties of which they could well be relieved if suitable technical assistance was available.

Turning to the work done so far, the main committee had, of course, reviewed and co-ordinated the work of the regions and, to some extent, outside institutions, and arranged for a number of reports to be circulated. Perhaps, their most important activity had been to review all the specifications ordinarily used for steel castings, with a view to approaching the British Standards Institution on the question of drawing up a revised series covering the whole field. The committee was assured that the institute welcomed its action, and the preliminary work was nearly completed.

Welding Clause Revision

The welding clause in the ordinary mild steel specification had taken up much time, but the suggestion made had now received the approval of the great majority of the members and of the executive council. The old clause was too restrictive, but the amendment at least recognised that satisfactory repairs could be made on castings, but provided a code of correct procedure in welding to ensure, as far as possible, a high standard of workmanship. It was found impossible, and indeed undesirable, to cover all the points of detail in the code, since to do so would invite trouble from misinterpretation, but the recommendations had been expanded in the form of an appendix called

Steelfounders' Technical Convention

"Recommendations to Steelfounders," which would not be part of the specification, but would be circulated to all members. The Association was demanding considerable relaxation of the conditions from the customer, and it was a moral obligation on its part to raise the standard of welding practice to the highest possible level in return.

Regional Reports

The Scottish region had completed their report on sand mills, and were now investigating core stoves and core drying. The report on sand mills did not disclose any startling developments, nor was this investigation, or any of the others, expected to do so, but he (Mr. Gray) believed that most members who had read it had found points of practical interest in it. Plant of this kind was liable to be taken for granted, as long as it did its work, and the Report, if it did no more, would at least have the effect on the reader of causing him to give a few minutes' thought to his own plant and scrutinise its performance.

The Sheffield region had presented a report on sand practice, disclosing startling variations in the mixtures used in different foundries, which had been the subject of discussion earlier in the convention. They had also produced a report on airless shot-blasting plant, which was being circulated to members.

The Midland region had completed their Report on sand handling plant, and were now investigating the performance of moulding machines. They had also been conducting an interesting investigation into a new form of fluidity test, which was to be discussed later. A useful memorandum was received from this region on inspection in the foundry, which formed the basis of a report that was circulated to the regions by the main committee.

The North-East Coast had presented a Report on shot-blast plant, which indicated that they were dissatisfied with the existing designs. They had interviewed representatives of the makers, but had, so far, not made much progress. They were formulating their criticisms and proposed to renew their attempt to have improvements incorporated, and to conduct further investigations with a view to raising the efficiency.

While no direct association had existed, except a short period with the B.I.S.R.A. organisation, a number of the Association's members served on their committees, which were now in active operation.

An Interesting Innovation

Mr. Cousans was chairman of the melting and metallurgical committee, and his firm had been doing valuable work on converter practice at Cattons, Limited, that was already showing results. An interesting development was that university students who were doing their vacation course at his works had been successfully employed as observers. A better control of the experiments had thus been obtained, and the students had benefitted from having a definite task instead of the rather unsatisfactory and aimless progress from one operation to another that often obtained in such cases.

This committee was also investigating the different methods of non-destructive testing and doing further work on the mechanism of freezing of steel. The latter subject was one in which he (Mr. Gray) was particularly interested. It had been criticised as having little direct bearing on practical problems, but in the larger sections at least that was not the case. The behaviour of steel as it passed from the liquid to the molten state was not as simple as it seemed and a better knowledge of what really happens was essential to the full understanding of feeder head design.

The moulding materials and refractories committee, under Dr. Rees, had helped the industry in the effort to find a substitute for silica paint, as already mentioned, and the Association was indebted to Mr. T. R. Walker for memoranda on the subject. They had also been testing new bentonites and other moulding materials that might be of assistance in the future, and conducting work of hot testing of mould materials.

Good House-keeping Efforts

The industrial respiratory diseases committee of the B.S.F.A. had worked in close co-operation with the technical committee, which made it the means of communication with the industry generally. It was proposed, in the near future, to organise a campaign with the object of improving house-keeping, since that was one of the important means of reducing dust and also accidents. A sub-committee was also engaged on producing a design for a new dressing shop for the Bathgate foundry of the North British Foundry Company, Limited, to whom the committee was much indebted for this opportunity. Various means of suppressing dust would be tried out, as well as other methods of improving conditions. Mr. Gray suggested that the experiment might be tried of having some, at least, of the regional meetings in the evening, after work hours, preceded by a meal.

The Future

Turning to future work, those old enemies burning on and hot tearing must be placed foremost on the list. The former, especially, was without any exception the most serious problem the industry had to tackle, on account of its bearing on the possible existence of silicosis in the dressing shops, to say nothing of the expense of removing it. It was one of the most difficult problems to solve, on account of the number of variables in the conditions that might affect the result, but very active steps must be taken to improve existing practice.

Precision and centrifugal casting had been suggested as suitable subjects, and though precision casting, especially, was only of interest to a limited number of firms, the possibilities should be fully explored in the national interest.

Finally, questions relating to conditions of work in steelfoundries must be given high priority, even if only to increase recruitment of labour. Foundries had

(*Continued on page* 244, *foot of column* 1.)

CUPOLA PRACTICE

In addition to the discussion already published (FOUNDRY TRADE JOURNAL, *September 26 and October 10, 1946), of "Hot-blast Cupola Design" and "Experiences with Balanced Air Feed in the Cupola," Mr. J. H. D. Hobson has sent the following written contribution.*

The Papers upon "Hot-blast Cupola Design" and "Experiences with Balanced Air Feed in the Cupola," describe some interesting features of cupola practice. A further type of cupola which may interest members is illustrated in Fig. A. The T.S.B. (Tees-side Bridge) pre-heated blast cupola has been in service for the past five years, chiefly melting high steel and alloy iron mixes with operating periods of eight to 10 hours duration.

The design illustrated clearly shows the pre-heating chamber and the easy flow, directional controlled passage of the air blast through a large proportioned wind belt. By this means uniform blast conditions are maintained over the full cross-sectional areas of the tuyeres.

The advantages claimed are generally as described by the Authors, high tapping temperatures are maintained, whilst the metal is less prone to gas and slag inclusions. Tuyeres remain clean over long periods.

The low consumption of lining refractories referred to under item 6, Paper 854, has not obtained in the operation of this cupola when using refractory bricks and rammed linings having alumina contents ranging from 35 to 66 per cent. The loss of refractories in this case is attributed to the high temperatures prevailing in the cupola melting zone.

Authors' Reply

The reply from Mr. T. H. Taft and Mr. H. A. Hallett, joint Authors of the Paper on "Experiences with Balanced Air Feed in the Cupola," is as follows:

Mr. Hobson's contribution is particularly interesting in view of the fact that the drawing is very similar to an experimental cupola that is being built which incorporates warm blast with Pari-blast application. In this particular case, due to the development of the linings, the Authors are able to run a very thin wall, and it will be interesting to measure the temperature of the air blast when working..

The lay-out of the pre-heating chamber and the relatively large wind belt, shown in Fig. A, together with the directional flow, would all assist in giving uniform distribution, but the Authors doubt whether uniform blast conditions are maintained over the full cross-sectional area of the tuyeres in view of the work they have done on this particular phase.

They agree, after studying the drawing, that some considerable advantage would be gained in working

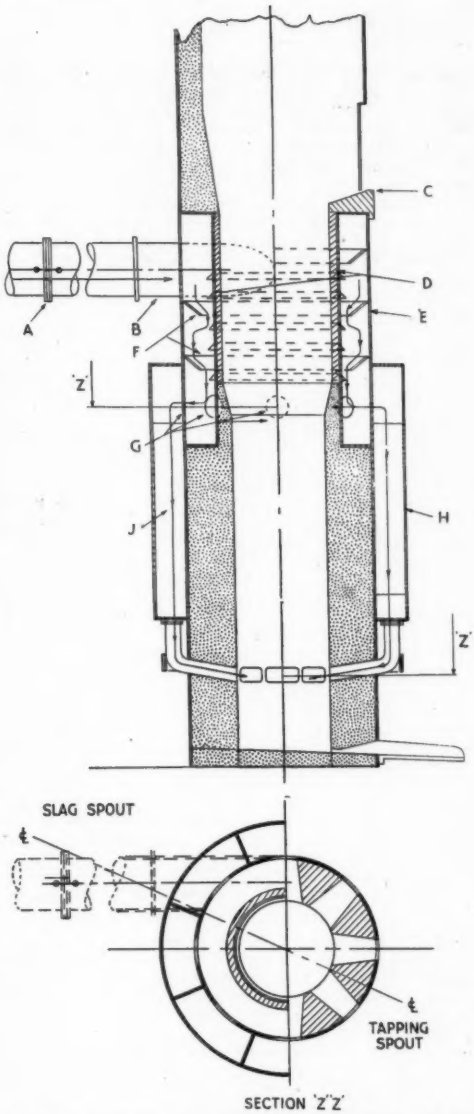


FIG. A.—DIAGRAMMATIC ARRANGEMENT OF T.S.B. PRE-HEATED BLAST CUPOLA.

A—Orifice plate for recorder; B—blast pipe with tangential entry; C—charging level; D—cast-iron protection plates; E—heater chamber; F—deflector vanes; G—apertures from chamber to windbelt; H—windbelt; J—windbelt guide vanes.

Cupola Practice

the cupola, although they refrain from commenting on the high tapping temperatures without information on the type of metal charges and the coke to metal ratio. If it be permissible to comment on the lining refractories, the Authors would like to mention a later development where they have rammed segments in the material described in the Paper, and these have given very satisfactory results. Apart from the burning away of the super-heating zone above the tuyeres these ganister coke bricks have been in position three weeks with only 1½ in. of wear 18 in. above the tuyeres. The softening of the lining is very limited, and it is suggested that more experiments on these lines may be of some assistance.

The reply from Mr. E. Longden, M.I.Mech.E., Author of the Paper on "Hot-blast Cupola Design," is as follows:

The contribution by Mr. J. H. D. Hobson is very welcome since it discloses that attempts have been made to develop hot-blast cupolas in this country. The Author's strictures on the paucity of information in respect to British developments were made to induce any designers of pre-heated blast cupolas to contribute to the pool of knowledge on hot-blast cupola design.

The T.S.B. pre-heated blast cupola is of simple construction and its maintenance cost will be low. No data are given of the temperature of the pre-heated blast, but there would appear to be little doubt that even though the increase in the air temperature be of a low order, beneficial results are obtained.

It will be noted that the various designs shown disclose that, in the search for means to pre-heat the blast, every section of the cupola shaft has, in turn, been employed in one way or another. It would appear that the lining loss in the T.S.B. cupola, compared with other types of pre-heated blast cupolas, may be due to the class of refractory used. The high-alumina content brick used in the T.S.B. cupola, whilst having a similar or perhaps slightly higher melting point to a high-silica brick, will soften at a lower temperature than the silica brick under load conditions.

(*Continued from next column.*)

for the floor labourers, where a few Algerians and the like were used. This foundry was not so heavily staffed with foreigners as most French concerns.

Our reception was particularly cordial, and with two other British visitors we partook of an English tea in the director's home, situated at the side of the works. Such a works as we have sketched is typical of many hundreds of similar concerns in France, where the limited size permits the management to be very familiar with every detail of the processes used, and the character of every man employed. We are old-fashioned enough to like these old-established family businesses, and sincerely thank the proprietors for the privilege of visiting their works.

A FRENCH NON-FERROUS FOUNDRY

By THE EDITOR

During our recent trip to Paris, we were invited to inspect a non-ferrous foundry in the outskirts of the French capital. The foundry made a speciality of casting, by the Durville proceses, aluminium-bronze billets for forging into bars, and the direct sand casting of phosphor-bronze in sticks. They also made large castings for cradles for steel sheet pickling tanks. The shops were very high and well ventilated. They were well serviced with overhead cranes. There was an almost complete absence of virgin metals, except aluminium, and the refining of miscellaneous raw materials had to be undertaken prior to final compounding. For the production of phosphor-bronze sticks, an overhead sand supply was available. The chutes were different from anything we have seen in this country as the outlet for the sand was made at the side, and not the base, of the hopper. The closure was a simple door, from which supplies were gathered by hand. A battery of Tabor machines was used for moulding the smaller sizes of sticks, and the moulds made were carefully dressed and spray blacked. Roller conveyors were used for taking the moulds to the casting station. The melting furnaces were oil fired, and it may be with these or other furnaces they use, there is a demand for kindling timber. Though the requirements cannot be large, one of their latest purchases was a power-driven saw for its preparation. This is worth emulation on this side of the Channel, for, after all, a sledge hammer is not exactly the most appropriate tool for reducing heavy timber to kindling of suitable size.

Control Test

A feature of metallurgical practice which has invariably intrigued us, is the home-made control test. For aluminium-bronze a small sample was taken to the forge and reduced to a cake. Information was given by the surface and by the edges, which gave a rapid indication of the composition and mechanical properties.

The set-up of the split mould and the attachment of the header core and heated ladle, if perhaps a little slow, displayed the best of French workmanship. When mounted in its cradle for crane tilting, there was the exact measuring of the depth, the careful skimming and smooth pouring. We have confidence that a perfect billet would result.

There was a vertical spinning machine of British make, which we have seen in several European non-ferrous foundries, but not in this country. Unfortunately it was not working at the time of our visit. The laboratories had not been touched by the invasion; on the mechanical side there were Ansler mechanical testing machines—an original model of the Brinell—and a Charpy impact tester; for micrographic work a French make of metallographic bench. American apparatus, except for the Speedy moisture tester, was used for sand control. As much chemical work as possible was put out, but some control work was done on the spot. All labour was Parisian, except

(*Continued at foot of previous column.*)

CURRENT PROBLEMS

OPENING BRANCH MEETING

Mr. Tom Shanks' address to Scottish foundrymen

At the opening meeting of the Scottish branch of the Institute, Mr. Tom Shanks delivered the following inaugural address, in the course of which he said:

Mr. Marshall and gentlemen, when I set out to prepare my address for this meeting, I intended it to be entirely on one subject—that of "Methods of Improving Foundry Conditions," drawing on what I have been able to observe here, and during my visit to the United States. I soon realised how little foundrymen, or foundry owners, could do about this at the present time; and as there are so many other factors claiming the immediate attention of those in the trade, I could not resist this opportunity of giving my views.

I heard a little story a few weeks ago which rather amused me. The father of a little girl of about 8 years was being considerably troubled during his Sunday afternoon study of the FOUNDRY TRADE JOURNAL. The child kept enquiring if it rained every Sunday in Britain, where all clouds came from, and if they had as much rain in Africa or Australia, and such other questions that could not always be answered by "yes" or "no." The father, remembering a map of the world in a recently discarded newspaper, and thinking this would occupy the little girl's attention for the rest of the afternoon, collected the map, tore it up into many pieces, and handed this to his child to reconstruct. To his surprise, the little girl was back within 10 minutes, telling him that she had done his puzzle, and wanted another. Knowing that her knowledge of geography was not great, the father immediately enquired just how this feat had been accomplished. The little girl promptly replied, "Well, father, I noticed the picture of a man on the other side of your map, and I had just to put the man right, and I had the world right."

Whatever moral there may be in that story, I want to use it as an illustration that there are two sides to every question, and two ways of looking at a thing. I will also use it as an excuse for drawing a few sayings from the other side of the world.

Working Conditions

The American Foundrymen's Association features the slogan:—"The foundry is a good place to work." There is a modern tendency to be critical about one's trade and conditions. Each tradesman denounces the general conditions in which he has to work. There almost seems to be some rivalry for sympathy. It is not just a case of poor wages, hard work or long hours. The foundry is apt to be described as a place —dark, dank, smoke-filled and poorly lighted, where dirty men swelter amidst obnoxious fumes; freezing cold in the mornings and roasting hot in the afternoons.

It is difficult, sometimes, to distinguish whether this talk is designed to have conditions improved, or to protect the trade against interlopers. Whatever it is, it is not well founded—the foundries to-day have generally risen far above this stage, but the impression is still prevalent, and sometimes encouraged. Working conditions mean much to a boy or man and a reputation such as this is one of the obstacles preventing a steady flow of new blood into a well-paid and highly interesting industry.

The foundry cannot yet offer orderly rows of polished and glittering machines, or cleanly swept white-lined passage ways, and even if a foundryman achieves a bowler hat, it requires a little more than the usual brushing to retain its smart appearance. Yet the foundry trade has its compensations, it is relatively well paid at all stages and offers greater scope for initiative, knowledge and imagination than most other processes, it provides healthy exercise for mind and body. There is probably a group of more elderly men, of the tradesman class, in the foundry, which is boosting P.A.Y.E. returns, than in any other trade.

Recruitment

The foundry industry is not the only one complaining about the absence of recruits, a glance through any trade paper will soon convince one of that. All trades are trying to expand, owing to the demand for materials, and the foundries have to compete for manpower against some very poor propaganda. There is also the matter of conscription. This country, unlike some others, has not yet had time to adjust itself to peacetime conscription and its effect on the introduction of youths to the apprenticeship trades. There is also coming extension of the schooling period from 14 to 15 years, and then from 15 to 16 years.

The effect of the relatively low and falling birth rate through the 30's and right up to the last five years. In spite of all the plans to alter this, I fear that the increased birth rate will be only temporary. We must realise that the flow of youth from the schools will only be a fraction of what it was 10 years ago; we have to share this with other industries and a growing proportion of services.

The greatest part of our recruitment must ultimately come from the ex-Servicemen—the young men about 21—semi-mature, more developed mentally and physically. We must fully realise this altered situation, and rapidly adjust ourselves to deal with it.

Only a limited proportion of the increasing requirements for castings can be met by labour-saving machinery: and that, only as and when the machinery becomes available. This will not be sufficient to counteract the normal wastage of man-power, by age and accident. It is essential that we attract, recruit and train a good proportion of the youths leaving the Services.

We who are genuinely interested in foundry matters, know that the "Foundry *is* a good place to work." There is surely no other trade so challenging to a man, both physically and mentally, so exhilarating in its scope and trials. The age is still with us when an appeal to the abilities of youth will get a response

Current Problems

—in any case, the industry requires energetic youth which wants something more to satisfy it than the promise of spoon-feeding. Encourage the thirst for knowledge, creativeness, and scope. There, I suggest, should be your appeal, it will not be unrewarded.

Amenities

There is much talk at the present time about heating, lighting, and baths for foundries, all of which require materials in such short supply as to be almost unprocurable. The foundry industry is certainly due its share of these commodities and it must endeavour to secure the most suitable types in all cases. This is somewhat outside the scope of the average foundryman, but nothing should be left to the future where the foundryman can take immediate steps to improve conditions locally.

Several foundry operations raise a certain amount of fumes, dust, and so-called dirt—I will again quote a slogan from the other side; I say the other side, not because the slogan is peculiar to the States, but simply because they give it prominence when referring to this very subject. The phrase they use is: "Treat the disease, not the symptoms." Whatever will be done in the future, we must look to what we, in the foundry, can do immediately. The source of all fumes should be carefully investigated. It is frequently possible to reduce these by proper attention to such small things as core oils and binders, proper ladle drying arrangements, and heating devices, which are either fumeless, or have well-constructed flues.

The availability of fuel, combined with the sight of an empty bucket or carbide tin, seems too great a temptation for the average foundry worker to resist. I have seen a coke brazier going within 5 yards of a pit furnace, and this on a warm day! Where fumes do arise, they should be localised as far as possible, and adequate ventilation provided.

Dust Problem

Dust must be tackled at the point of origin—if it gets a chance to rise, it will ultimately settle on everything: therefore, all means possible must be used to keep this down. While I have never seen anything approaching a dustless foundry, by localising the points of origin into draught-free regions, the use of moisture to weigh down dust and silt, and, when available, down draught extraction plants, the foundry atmosphere can be kept as clear as that in most other workshops. I have been able to see clearly across 70 yards of foundry floor during a heavy cast in a well-planned foundry.

Regular attention to such small things as the cleaning of windows, light shades, and paint work, can make a great difference to the condition of a shop, and the workers therein. For painting, something better than the usual whitewash is required. The paint to be recommended should provide a smooth surface, maximum light reflection without glare, be capable of being wiped down without smudging, and washing down when necessary. It should cover all internal surfaces, from the apex of the roof to floor level.

The normal jobbing foundry has not fixed operating points like a machine shop; it is, of necessity, a flexible arrangement, and, like all flexible arrangements, unless definite rules or restrictions to the movements of material are made known, chaos will result. Some moulders, even the most skilful, are notoriously untidy, and if the foundry has to make progress in appearance, it is essential that attention is paid to the detail of shop discipline. Our recruits should have the example of tidiness and cleanliness regularly before them.

Education

More and more people—individuals and organisations—are giving their attention to the correct education and training for foundry personnel. This Institute was originally formed for that purpose, and, while the fine original objects have undergone some modification in the course of time, the object of spreading knowledge of foundry technique and theory to those in the trade, together with the direction of foundry education at trade schools, is still of first importance.

I would like to point out that, with few exceptions, the foundry industry has trained, developed, and brought to prominence its own key men, technicians, and outstanding personalities. Most of these men have been self educated, that is to say, that apart from a general education they have had their training in the foundry, and have themselves extended it by reading, evening classes, and Institute meetings. The technical abilities of these men are surpassed by none, the only trouble is that they are not in sufficient number. Britain's manufacturing ability in the past did not arise from any geographical, historical or circumstantial accident. It had its roots in the quality of the people, their manipulative, commercial and enterprising ability.

The new policy is to ensure further education in technical matters to all people in technical trades. This will be done in three ways: Trainees may attend a foundry school or college—taking a complete course (as whole-time students) right up to and including graduate standards. Secondly, the youths engaged in a technical trade will join the industry as wage earners and spend part of the working time at a trade school, under the department of education, where they will be instructed in theory and practice. Thirdly, large industrial concerns propose to have their own schools, where daily lectures and demonstrations can be given by specially qualified instructors. This is undoubtedly an excellent scheme, but I am afraid that only a very small proportion of the foundries in this country come into this class.

Most foundries will have to avail themselves of the facilities being offered to part-time students by the education authorities, and I feel that this will require to be carefully watched.

I deplore the modern tendency to equip our part-time schools with miniature, specialised, and expensive equipment, actually only suited to experiment or research. Descriptions of plant and processes can be far more ably described by the use of good illustra-

tions, or films, in the lecture room. Practically every foundry, no matter how small, can arrange some kind of practical training course, and I know of no foundry operations where the student cannot stand by, or take part in them. In this way he will learn far more of the technique than could ever be gained from a replica in miniature.

There is also the different outlook on the quality of a learner. The good scholar has a retentative mind, and is quick witted; the good practical man is adaptable, can associate ideas, and apply his knowledge. The amount of progress the student feels himself to be making largely reflects on his outlook, encouraging him or otherwise. I feel that schools should concentrate entirely on developing the mind; and, for boys entering industry, mathematics, the art of reasoning, and scientific method, should be featured. Technical or trade schools should continue this and direct it to the particular trade in hand, together with associated trades.

The teaching of the practice and technique of the trade should be left to the industry itself; for, provided this training is not entirely neglected, the technique is being practised successfully by every business, and the method adopted, is not so confusing to the student. Schools should be complementary, not contemporary—to quote Scobie. Emphasis should not be placed on handing down a collection of traditional knowledge, but rather on the ideas behind the tradition. Instead of "know how," interest centres on "know why." Foundry trade schools attempt to impart so much knowledge in a limited time, that it can only be assimilated by the enthusiast. We need not worry about the enthusiast, rather try to save the ordinary student much time and confusion by leaving the theory—the "know *why*"—to the schools. The schools need only issue a detailed and time synopsis of the course to the foundry instructor, he will look after the "*know how*," without having to worry about any preconceived ideas on technique which the student might have.

Production

Product problems include attempting to satisfy the engineers' demand for castings, and ability rapidly to increase production figures. These are of great importance to the engineering trade and British industry as a whole. The engineer has increased his productive capacity with new machines, tools, and additional manpower, he appears to have neglected his castings supply. Cast-iron and malleable founders are swamped with orders, steelfounders are well booked ahead, copper-base and light alloy founders only await the step up in ferrous foundry products.

Under existing circumstances, the main factor limiting foundry production is lack of skilled tradesmen; this will take time to rectify. Foundry plant and equipment also can only be secured after long delays. It is my contention that much more can be done, and must be done, with the present labour force, existing floor space, and plant. A faster turnover or throughput has got to be arranged. I have no new rabbit to bring forth from any hat, I can only wave the well worn banner again—planning. The chain of production—designer, pattern-maker, moulder, engineer and consumer, is still too loose, even in tied foundries.

Designers must be aware that the bottleneck is in the foundries—they should consult the foundry before completing the drawings. Foundries can make almost anything, but it takes time—if quantity be required, then simple productive design must be included. I must say that any requests I have made for modifications, to assist production, have been courteously considered, and largely met, but all too frequently after the pattern had been made. If designers would only realise that the rate of production on some pieces may be doubled, or even trebled, with properly planned design, and patterns, the engineering trade would benefit enormously.

Foundrymen are not blameless; I have seen a drawing handed to a moulder for his advice; he has returned it saying, "You get the pattern made, I'll make the casting." Another point I would like to make, is the retarding effect of raking out old and well-worn patterns. We heard a lot about post-war products, and how smart they were going to be. Whether it be for lack of time, or shortage of pattern-makers, many patterns which are little more than scrap are back in production, almost doubling the moulding time necessary.

There is just one other point, we know established methods are successful by the mere continuance of their existence, but, are they the best? The matter cannot afford to waste man-hours. Every batch production job should be carefully examined in detail—design, pattern equipment, method, and box plant.

Do not rely entirely on the pattern-maker, but seek his co-operation.

Do not be afraid to try new methods, or get up special plant, a little time spent in this way may be a valuable investment.

Get out that notebook and see if you can adopt any of the ideas you have seen practised successfully in other foundries.

Attend the Institute meetings regularly, give, and seek advice freely.

HOUSE ORGANS

The Digger, published by, for, and about the employees of Ruston-Bucyrus, Limited, of Lincoln. It records the sale of their 10,000th excavator.

The Stantonian, published by the Stanton Ironworks, Company, Limited, carries photographs which include the lads of 1894 and 1904. The reviewer was impressed with their fine physique as compared with what he sees in the large cities today, and deplores the obvious decline.

THE NEW £100,000 FACTORY of Le Tourneau (Great Britain), Limited, which has been built at Stockton-on-Tees for the production of heavy earth-moving machinery, was dedicated at a religious service recently. Mr. K. G. Le Tourneau, principal of the parent company, had flown from Canada for the event.

PUBLICATIONS RECEIVED

Transactions of the Scottish Engineering Students' Association, Vol. I. Published by the Association from "Snowdon," Lilybank, Port Glasgow.

This Association is officially recognised by some 27 institutions and societies, including the Institute of British Foundrymen. This, its first publication, has attained a high standard, and contains in addition to a presidential address, by Sir Harold E. Yarrow, Papers on photoelasticity, R.E. work in Italy; the selection of steel for industrial uses, and Radar. The Transactions run to 84 pages, and carry numerous insets, on which are printed the illustrations. The reviewer congratulates the new Association on its initial efforts. It has created a standard which will be difficult to maintain.

Notiziario Campfond, No. 76. Published by the Consorzio Nazionale Approvvigionamenti Materie Prime per Fonderie Ghisa, Via della Posta 3, Milan, Italy.

This is a four-page bulletin, published by an organisation charged with the regulation and supply of raw materials to the Italian ironfoundry industry. It contains a number of commercial notes as to the market price of pig-irons, the importation of 1,000 tons of a Dutch core binder, and quantities of American graphite. It promises in its next issue a translation of Mr. E. Longden's Paper on "Hot-blast Cupola Design."

BRITISH STEELFOUNDERS' TECHNICAL CONVENTION

(*Continued from page* 238)

a bad name, and the youth seeking a job, on leaving school, tended to choose other trades where conditions were better.

In conclusion, he took the opportunity, on behalf of the main committee, of thanking all those who had been participating in the work, for their support. The attendance at regional meetings had been remarkably high, and not only had the work which regions had undertaken, at the request of the main committee, been carried out in a thorough and efficient manner, but many useful suggestions of various kinds had been forwarded to the main committee, and independent investigations initiated in the regions were being reported for the benefit of the other districts.

He wished, in particular, to thank the chairmen of the regions, personally, for the support he had received as chairman, and for the way in which they had performed their aduous duties. A great deal of work had fallen on them, and much of such success achieved was due to their unselfish energy and tact.

H. M. P. TOOL & ENGINEERING COMPANY, LIMITED, is being wound up voluntarily. Mr. E. C. Thorne, 514, Ipswich Road, Trading Estate, Slough, Bucks, is the liquidator.

FORTHCOMING EVENTS

(Secretaries are invited to send in notices of meetings, etc., for inclusion in this column.)

NOVEMBER 8.

Institute of Physics :—"The Application of X-rays to the Study of Stresses in Metals," by Dr. W. A. Wood. At Sheffield, at 2.30 p.m.

Institute of Physics (Manchester and District branch) :—"Contact Potentials," by F. A. Vick. At the New Physics Theatre, Manchester University, at 7 p.m.

Institution of Mechanical Engineers :—"Feed Distribution and Hunting in Marine Water-tube Boilers," by H. Hiller. At the Institution, Great George Street, S.W.1, at 5.30 p.m.

Manchester Association of Engineers :—"Motion and Movement in Modern Engineering Practice," by R. Laban and F. C. Lawrence. At the Engineers' Club, 17, Albert Square, Manchester, at 6.45 p.m.

NOVEMBER 9.

Institute of Physics :—"Some Successes and Failures in the Application of X-rays to Industrial Problems," by Dr. A. H. Jay. At the Royal Victoria Station Hotel, Sheffield, at 9.30 a.m.

NOVEMBER 14.

Institute of Metals (London Local section) :—"Metallurgical Education," by Prof. D. Hanson. At the Royal School of Mines, South Kensington, London, S.W.7, at 7 p.m.

NOVEMBER 15.

Institution of Mechanical Engineers :—Thomas Hawksley Lecture—"Unexploded Bomb Disposal," by Dr. H. J. Gough. At the Institution, Great George Street, London, S.W.1, at 5.30 p.m.

Institute of British Foundrymen

NOVEMBER 9.

West Riding of Yorkshire branch :—Visit to Thomas Broadbent & Sons, Limited, Central Ironworks, Huddersfield.

NOVEMBER 11.

Sheffield branch :—"X-ray Technique in the Examination of Steel Castings," by Dr. R. Jackson. At the Royal Victoria Station Hotel, Sheffield, at 7.30 p.m.

NOVEMBER 12.

Burnley section :—"Odd Jobs Plus," by W. E. Connah. At the Municipal College, Ormerod Road, Burnley, at 7.30 p.m.

Slough section :—"The Founding of Bronze Propellors," by G. W. Reid. At the Lecture Theatre, High Duty Alloys, Limited, Trading Estate, Slough, at 7 p.m.

NOVEMBER 14.

East Anglian section :—Annual dinner and smoking concert. At the Crown and Anchor Hotel, Ipswich, at 7 p.m.

Lincoln section :—"Observations on German Light Grey Iron Industry Practice," by Dr. H. T. Angus. At the Technical College, Lincoln, at 7.15 p.m.

GERMAN TECHNICAL REPORTS

Three reports of interest to the foundry industry have been made by teams of industrial experts visiting Germany under the auspices of the British Intelligence Objectives Sub-committee, and the Field Information Agency, Technical. The reports are: B.I.O.S. 694—Magnesium pressure die casting (Mahlewerk, Fellbach, Stuttgart)—price 1s. 1d., post free; F.I.A.T. 81—Centrifugal casting of metals in Germany (2s. 1d.); and F.I.A.T. 387—German steel casting industry (13s. 4d.).

A limited number of copies only is available, and these may be obtained from H.M. Stationary Office, York House, Kingsway, London, W.C.2, 13A, Castle Street, Edinburgh, 2; 39-41, King Street, Manchester, 2; 1, St. Andrews Crescent, Cardiff; and 80, Chichester Street, Belfast.

WILL METAL PRICES CRACK ?

By "ONLOOKER"

At the time of writing the Ministry of Supply have not made any change in the official prices of non-ferrous metals in spite of the fact that copper, lead and zinc all stand below their equivalent values on the world market. Tin, of course, was raised in the last week of September to a level at which production will be encouraged, and already there are suggestions that soon industry will have to face a sharp drop from the present level. In regard to the other metals, the American export price of copper stands at 17½ cents f.a.s., which means something over £100 delivered to consumers' works in the United Kingdom, while both lead and zinc should be somewhere over £60. On the Continent these prices are being paid without any undue worry, but in this country there is a growing volume of opinion that if the non-ferrous metals are advanced in price again there will be a definite check to demand. Many feel that it is unfortunate that the Government have adopted the policy of averaging, thereby ensuring that on this rising world market the sterling price always lags behind, and is therefore under the world price. On the turn the country will still lag behind, but then the U.K. quotation will be *over* the world price all the time instead of under it. A striking example of this "out of step" arrangement has been seen in cotton where the British price has risen by 6d. per pound, while at the same time in the States a severe slump is in progress! In the case of these important raw materials which have to be imported it would at least give some suggestion of freedom of trading with quotations approximately in line with the world values.

The Copper Shortage

While it is true that the price of zinc abroad is steady, and even a little below its peak, the same cannot be said of copper which continues to go from strength to strength in the face of a severe shortage, due to the continued upsets to production in the industry. The most recent trouble is in Chile, where work has ceased at one of the largest mines responsible for sending its output both to the United States and Europe. The duration of these strikes is, of course, uncertain but most of them seem to extend for not less than one month, and sometimes for two. Thus the world is being kept short of much-needed copper, and it is hardly surprising that the price maintains its upward trend, for consumption, in the United States especially, is running at a remarkably high level. So far, it must be admitted, there are no signs that the inflated level at which copper stands is causing a falling tendency in the use of the metal, and this is probably because the ultimate consumer does not mind, within reason, what he is charged. The vacuum created by the war in the supply of copper products, of articles into the construction of which the metal enters, has undoubtedly been very large indeed, but it is virtually impossible to say just how great this is. Undoubtedly as things look at the moment the stage is set for a continuation of the present rising tendency in copper values and it would be altogether wrong to presume that, say 18 cents or even 20 cents, will prove to be the top. In the States recent events have made it obvious that the days of price control are numbered and it is necessary to face up to the fact that before very long we may see the price ceilings removed from the non-ferrous metals. Actually this would not materially offset the world prices, apart from sentiment. It would, however, go some way towards speeding up production for these ceiling prices have been very unpopular. In the circumstances it looks very much as if copper may go quite a lot higher yet.

Inflation Danger

The question is, however, whether the price is not being unduly and dangerously inflated. This record bull market which has been witnessed since the war ended must come to an end, and signs are not lacking that in some directions the rise has been overdone. Platinum, for example, was forced up to £23 5s., but reacted suddenly and violently to £18. In the United States there has been a shattering setback in the price of cotton, followed, it is true, by some recovery. Wall Street has taken a toss which has reduced values of many stocks and shares by as much as 30 per cent. For those who care to read, the writing is on the wall, but for the present the mood is one of confidence more than fear, in spite of many awkward problems which seem to defy solution. Perhaps the greatest weakness in the present situation is that the commodity markets being closed there is no barometer to register changes, present and to come. It will be very interesting to see what happens on the rubber market if a reopening is achieved, as seems very likely, on January 1 next. As to the metals, the values ruling to-day are dictated by the producers, and circumstances have so played into their hands that they are in a position to ask almost any price they like. This obviously is not a satisfactory situation and the producers know it as well as anybody else. Nevertheless the portents are that higher prices are in store.

Buffer Needed

It would be rather stupid to think that so long as the going is good the producers will refrain from getting the best prices they can for their products. During the war many, perhaps most of them, went through a pretty difficult time and it is natural enough that they should want to enjoy their "holiday." What is lacking is a "governor," and that can only be provided by a futures market which acts as a kind of buffer between producer and consumer. In view of shortages a reopening at present would certainly be difficult without running the risk of values getting out of hand, but there would be no harm at least in announcing an intention. All things considered it looks very much as if copper, and perhaps lead, too, will be pushed up to such a level that the position will be undermined by some sort of a "buyer's strike," and if that happens then we must expect to see the situation finally resolved by a serious and perhaps prolonged setback in values.

IMPORTS AND EXPORTS OF IRON AND STEEL

BOARD OF TRADE RETURNS FOR SEPTEMBER

The following tables, based on Board of Trade returns, give figures of imports and exports of iron and steel in September and in the first nine months of 1946. Figures for three-quarters of 1938 are given for purposes of comparison.

Total Exports of Iron and Steel.

Destination.	September, 1946.	Nine months ended September.	Three-quarters of 1938.
	Tons.	Tons.	Tons.
Eire	4,584	47,132	41,790
Channel Islands	342	4,023	5,562
Palestine	5,495	73,268	6,054
British West Africa	4,775	32,710	37,308
Union of South Africa	20,896	182,331	173,316
Northern Rhodesia	120	2,315	15,432
Southern Rhodesia	1,610	37,634	27,159
British East Africa	3,340	22,067	19,449
British India	4,381	57,289	119,010
Burma	495	11,085	13,884
British Malaya	2,064	26,475	49,938
Ceylon	1,093	10,701	19,524
Hong Kong	131	12,269	17,697
Australia	2,513	26,542	128,178
New Zealand	1,794	34,266	98,913
Canada	1,722	7,093	64,056
British West India Islands	2,908	19,684	33,189
Anglo-Egyptian Sudan	939	13,255	6,219
Other British Countries	2,343	22,904	16,455
Soviet Union	38	40	3,261
Finland	3,281	37,366	13,206
Norway	3,654	57,852	15,204
Iceland	738	9,701	495
Denmark	9,467	168,455	65,442
Poland	6	13,120	1,866
Netherlands	6,290	124,965	38,670
Dutch East Indies	69	6,790	20,481
Dutch West India Islands	818	7,896	1,848
Belgium	1,335	25,072	15,243
France	4,010	59,119	10,041
Portugal	1,364	37,106	5,784
Portuguese East Africa	669	3,756	10,665
Spain	143	7,547	5,823
Italy	1,443	6,127	3,855
Greece	3,684	13,746	1,314
Turkey	705	9,421	10,317
Egypt	4,079	74,579	25,806
Iraq	5,617	43,493	19,305
Iran	4,461	64,721	82,785
China	1,107	14,684	16,599
U.S.A.	93	719	1,641
Venezuela	3,166	25,711	3,507
Ecuador	859	3,625	1,194
Chile	214	4,227	4,719
Brazil	1,207	36,391	12,744
Uruguay	484	9,739	5,691
Argentine	3,164	64,628	59,517
Other Foreign Countries	14,070	192,606	86,787
Total	137,780	1,766,245	1,436,006

THE RADSTOCK ENGINEERING COMPANY, LIMITED, the Raglan Plant Company, Limited, the Rushgrove Engineering Company, Limited, the Redingham Engineering Company, Limited, the Rocklands Engineering Company, Limited, the R. T. Plant Hire Company, Limited, Rushdene Plant Services, Limited, and the Radmore Engineering Company, Limited, are being wound up voluntarily. Mr. W. R. V. Searle, Capel House, 54, New Broad Street, London, E.C.2, is the liquidator in each case.

Total Imports of Iron and Steel.

From	September, 1946.	Nine months ended September.	Three-quarters of 1938.
	Tons.	Tons.	Tons.
British India	1,641	13,830	116,724
Australia	11,596	87,310	27
Canada	1,221	89,227	88,032
Other British Countries	475	1,087	4,200
Sweden	549	2,595	67,347
Norway	1,434	7,232	25,332
Belgium	5,215	8,839	205,260
Luxemburg	384	399	43,950
France	61	240	193,011
U.S.A.	39,087	159,424	150,519
Other Foreign Countries	16	3,003	113,820
Total	61,679	373,186	1,008,203
Iron ore and concentrates—			
Manganiferous	18,300	97,216	46,713
Other sorts	562,506	4,842,047	3,826,404
Iron and steel, scrap and waste, fit only for the recovery of metal	34,510	365,501	474,153

Exports of Iron and Steel by Products.

Product.	September, 1946.	Nine months ended September.	Three-quarters of 1938.
	Tons.	Tons.	Tons.
Pig-iron	3,131	13,053	70,455
Ferro-alloys, etc.—			
Ferro-tungsten	10	223	387
Spiegeleisen and ferro-manganese	2,843	45,218	3,897
All other descriptions*	26	824	786
Ingots, blooms, billets and slabs	591	3,154	7,308
Iron bars and rods	399	8,298	2,397
Sheet and tinplate bars	—	221	9,285
Wire rods and bright steel bars	2,638	43,590	7,326
Other steel bars and rods	15,085	195,922	76,509
Special steel	1,203	13,445	3,609
Angles, shapes and sections	8,452	111,010	50,553
Castings and forgings	234	2,250	1,215
Girders, beams, joists and pillars	4,013	53,622	25,104
Hoop and strip	2,442	58,629	28,032
Plates, ¼-in. thick and over	10,865	230,667	98,226
Black plates	350	18,347	10,905
Black sheets	4,399	37,393	47,634
Galvanised sheets	2,058	26,074	110,202
Tinplates	5,949	82,446	239,400
Tinned sheets	487	2,099	1,059
Terneplates	424	1,077	3,243
Decorated tinplates	—	464	3,276
Cast-iron pipes, up to 6-in. dia.	4,432	33,483	36,696
Do., over 6-in. dia.	3,307	25,059	32,223
Wrought-iron tubes	17,176	197,365	164,979
Steel rails	8,580	138,363	79,500
Sleepers and fishplates	6,476	82,068	19,038
Other railway material	1,662	19,322	20,079
Wire	4,781	59,251	41,388
Wire manufactures	2,336	25,843	22,116
Nails, tacks, etc.	541	6,074	2,856
Rivets and washers	765	6,661	6,402
Wood screws	382	4,225	1,884
Bolts, nuts, and metal screws	1,989	18,023	13,179
Stoves, grates, etc.	603	4,508	6,864
Sanitary cisterns	65	785	2,109
Fencing material	404	2,791	3,849
Anchors, etc.	363	4,309	4,752
Chains	644	6,805	4,719
Springs	363	4,382	2,949
Hollow-ware	4,241	56,021	8,028
All other manufactures	13,071	116,881	162,345
Total	137,780	1,766,245	1,436,006

* The figures for 1946 are not completely comparable with those for earlier years.

PERSONAL

MR. H. H. HAGAN has been appointed to the board of Lobnitz & Company, Limited, engineers and dredger builders, of Renfrew.

MR. JOHN TOWNS-ROBINSON has joined the staff of the Southern Forge, Limited, of Langley, Bucks, as technical superintendent.

MR. HERBERT FRANCIS is retiring from the board of Kayser, Ellison & Company, Limited, steelmakers, of Sheffield, after 67 years' service with the firm.

MR. A. DIXON, MR. J. H. ROBERTS and MR. A. KENYON, secretary of the company, have been appointed directors of Edward Wood & Company, Limited, engineers, of Manchester.

MR. R. B. HEYWOOD, 37, Bass Street, Derby, who until recently was responsible for the photoelastic department at Rolls-Royce, Limited, is now a consultant on photoelectric and stress problems.

MR. W. J. PICKERSGILL has resigned his position as managing director of William Pickersgill & Sons, Limited, shipbuilders and repairers, of Sunderland, but is retaining his post as chairman of the company.

MR. A. W. VINEY has retired from his position as a director of Peter Brotherhood, Limited, engineers and ironfounders, of Peterborough, and manager of the company's torpedo department. He is Mayor of Peterborough.

MR. A. WHITFIELD has recently been appointed by E. Boydell & Company, Limited, manufacturers of Muir-Hill dumpers and shovels, of Manchester, as their representative for the North-West of England and North Wales.

MR. HARRY TOWERS has been elected to the board of A. Reyrolle & Company, Limited, manufacturing electrical engineers, of Hebburn-on-Tyne. He has also been appointed general manager. Mr. Towers will assume his new duties on January 1 next.

MR. L. H. KING, a director of Baker Perkins, Limited, manufacturing engineers and foundrymen, of Peterborough, is leaving for Australia on a business visit. He will be accompanied by his elder son, MR. GEOFFREY B. G. KING, who is to take up an executive post with Baker Perkins (Proprietary), Limited, Melbourne.

MR. ALLAN STEVENSON, a director of David Rowan & Company, Limited, Glasgow, was re-elected chairman for 1946-47 of the National Association of Marine Enginebuilders at their annual meeting held in Edinburgh last month. MR. H. E. SHEARDOWN, chairman of Charles D. Holmes & Company, Limited, Hull, was re-elected vice-chairman.

MR. G. R. CLARKE has been appointed secretary of the Sheepbridge Coal & Iron Company, Limited, in succession to MR. H. HART, who now becomes Finance Director to the North-Eastern Divisional Coal Board. Mr. Clarke joined the company in 1938 and in 1942 was appointed secretary of the Sheepbridge Stokes Centrifugal Castings Company, Limited, and other subsidiaries, which position he will continue to hold.

CONTROL OF IRON AND STEEL

PRICE ADJUSTMENTS UNDER NEW ORDER

The Minister of Supply has made the Control of Iron and Steel (No. 54) Order, which came into force on October 30. It amends the maximum prices of certain steel products, the principal alterations being increases in the prices of florists' wire, railway crank axles and parts, and railway laminated springs, and a reduction in the price of alloy steels containing molybdenum and vanadium.

The following is an outline of the alterations involved:—

Alloy steel billets and bars, alloy steel wire rods, and shell steel—reduction in the price of molybdenum and vanadium steels according to quality and section. Nickel-chrome-molybdenum billets, Ni 2.75/3.75 per cent., Cr 0.60/1.25 per cent., Mo 0.20/0.60 per cent., have been reduced from £36 10s. 3d. to £36 5s. 9d. per ton, and stamping bars from £47 18s. 3d. to £47 13s. 3d.

Re-rolled products—schedule re-edited; chrome-vanadium spring steel reduced in price.

Bright carbon steel bars and bright-drawn flats—schedule re-edited, minor corrections to certain extras.

Tinned sheets—schedule re-edited. Prices increased according to quality consequent on increase in price of tin.

Hot-finished seamless tubes—extra increased for tubes made from forged bars.

Hot-finished boiler tubes—prices for wrought-iron screwed nuts deleted.

Mild-steel wire and wire products—schedule re-edited. Increase in certain extras for small quantities and paper wrapping.

Florists' wire—varying increase, according to size.

Special patented wire—extra for paper wrapping established.

Railway crank axles and parts—varying increases.

Laminated railway springs—increase of £2 per ton on standard wagon bearings and buffing springs.

Merchants' consolidated price schedule—adjusted to give effect to above amendments.

NOTIFICATION OF DANGEROUS OCCURRENCES

The Minister of Labour and National Service has given notice that he proposes to make under Section 65 of the Factories Act, 1937, regulations entitled "The Dangerous Occurrence (Notification) Regulations, 1946." The Dangerous Occurrences (Notification) Order, 1935, which would be revoked by these regulations, extended the provisions with regard to notice of accidents to certain occurrences, but was limited to factories or workshops within the meaning of the Factory and Workshop Act, 1901. The proposed regulations require notification of the same classes of occurrences happening in factories as defined in the Factories Act, 1937. Copies of the regulations are obtainable from the Stationery Office (1d.).

NEWS IN BRIEF

THE EALING TOOL & GAUGE, LIMITED, Grosvenor Road, Hanwell, London, W.7, is being wound up voluntarily.

CLARKE, CHAPMAN & COMPANY, LIMITED, Victoria Works, Gateshead, are erecting additional engineering shops.

FURTHER DEVELOPMENTS are planned shortly at the yard of the Blyth Dry Docks & Shipbuilding Company, Limited, which is being modernised.

ASSOCIATED BRITISH OIL ENGINES, LIMITED, are to establish a large new factory at Wishaw for the manufacture of oil engines having an output up to 100 h.p.

THE CHANCELLOR OF THE EXCHEQUER made it clear in the House of Commons last week, that nationalised companies would be able to distribute their E.P.T. refunds if placed in liquidation.

AN EXHIBITION at Sunderland to commemorate the 600th anniversary of shipbuilding in the town will be opened on November 16 by Mr. G. R. Strauss, Parliamentary Secretary to the Ministry of Transport.

ALLEN WEST & COMPANY, LIMITED, makers of electric controllers and switchgear, have now adopted the five-day week. Their works and offices in Brighton will in future be closed from Friday night until Monday morning.

THE COMPANIES' REGISTRATION OFFICE gives notice that the names of the undermentioned companies have been struck off the register, and are dissolved: Adelaide Steel & Tube Company, Limited; British Heyman Engineering Company, Limited; Engineering Utilities, Limited; Mere Engineering & Production Company, Limited; St. Pancras Metal Industries, Limited.

METALLURGICAL TRAINING was the subject chosen by Dr. T. Wright for his presidential address to the Birmingham Metallurgical Society. Dr. Wright, who is a lecturer in metallurgy at Birmingham University, was inducted by the immediate past-president, Dr. J. W. Jenkin, chief technical adviser to Tube Investments, Limited, Birmingham, to whom he presented the silver medal of the Society.

RICHARD THOMAS & BALDWINS, LIMITED, and Guest Keen Baldwins Iron & Steel Company, Limited, have large extensions in view, which it is hoped will make them among the most modern and up-to-date plants in the world, says Col. Sir W. Charles Wright, Bt., chairman of Baldwins (Holdings), Limited, in his statement circulated with the annual report of the company. If the directors feel satisfied with the terms and conditions upon which the schemes will be proceeded with, they will invest money in them in place of the present gilt-edged securities, he adds.

PLANS FOR A NEW FACTORY involving the expenditure of about £600,000 for further extending the manufacture of cables and other electrical equipment are announced by British Insulated Callender's Cables, Limited. Arrangements are proceeding for the purchase of a 23-acre site on the Kirby Trading Estate of the Liverpool Corporation. The new factory will have a floor space initially of approximately 250,000 sq. ft., and will provide considerable employment in the Liverpool area in addition to the 10,000 persons already employed in the B.I. Callender factories at Prescot and Helsby.

AS A NATION we should only regain our former industrial supremacy if it was realised in time that increases in real wages could only come as a result of increased productivity, said Sir Llewellyn T. G. Soulsby, chairman of Stothert & Pitt, Limited, crane manufacturers, ironfounders, etc., of Bath, in his speech at the recent annual meeting of the company. We in this country had to face more and more competition from countries which were developing new industries; and we could only hold our place in the world by keeping ahead in technical development and by keeping down the cost of production by improved methods.

THE ANNUAL REPORT for the year ended March 31 last of the Indian Iron & Steel Company, Limited, states that pig-iron and coke production during the year amounted to 485,340 tons and 587,187 tons respectively, against 435,464 tons and 524,423 tons for the previous year. Production was again governed primarily by the availability of coal, the supply and quality of which continued to be a source of anxiety. Output of castings from the Kulti foundries was 53,103 tons, against 53,604 tons for the previous year. Gross raisings from the company's collieries amounted to 345,172 tons, against 351,133 tons in 1944-45. The new spun-pipe plant was completed during the year and is now an established production unit. Work has commenced on the new coke-oven plant at Hirapur and site clearing is in progress for the remodelling of the Kulti foundries.

NON-FERROUS SCRAP METAL STOCKS AND SALES

MINISTRY OF SUPPLY FIGURES

The Ministry of Supply has issued the following information regarding the Government's stock and sales of non-ferrous scrap metals. The stock of scrap on charge on September 30 was 183,752 tons, made up as follows:—Q.F. cases and muffled S.A.A., 85,658 tons; ingots, 17,993; lead and lead alloy, 1,503; copper and copper alloy, 20,082; zinc and zinc alloy, 12,666; other grades (including mixed metal from cancelled contracts, Admiralty scrap, Army scrap, and M.O.W. scrap), 45,850 tons.

Sales during August and September amounted to 18,286 tons (approximate value of £910,000), and the analysis was as follows:—Q.F. and muffled, 5,964 tons; copper and copper alloy, 7,872; lead and lead alloy, 4,448; other grades (including zinc and zinc alloy), 2 tons. Material put out to tender during this period amounted to 8,405 tons, of which 4,277 tons were lead. During the period August/September 17,220 tons were invoiced, the value being £883,295.

STANTON-DALE
REFINED PIG IRON

Manufactured to guaranteed analyses in seven standard grades. Also obtainable to individual specification

THE 11-TON CASTING ILLUSTRATED IS ONE OF A SERIES MADE IN A STANTON FOUNDRY FROM STANTON DALE IRON

1. Core being lowered into mould
2. Pouring the metal
3. Finished casting in steel

The
STANTON IRONWORKS
COMPANY LIMITED
NEAR NOTTINGHAM

NEW TRADE MARKS

The following applications to register trade marks appear in the "Trade Marks Journal":—

"TECONIC"—Castings. JOHN GARDOM & COMPANY, 270, Derby Road, Marehay, near Derby.

"SELYAC"—Machines. SELYAC PRECISION ENGINEERING COMPANY, LIMITED, Kyme Road, Romford.

"VANDO"—Electric welding electrodes. BERTRAND TURNER, 23, Iverna Gardens, Kensington, London, W.8.

"SEA-LOL"—Stuffing boxes (parts of machinery). THE HON. SHERMAN STONOR, Stonor Park, Stonor, Oxon.

"WILKALISOL"—Aluminium solder. P. WILKINSON & SONS, LIMITED, 14-19, Tottenham Mews, London, W.1.

"RS"—Engine pistons. HEPWORTH & GRANDAGE, LIMITED, St. John's Works, East Bowling, Bradford, Yorks.

"PLASTOMATIC"—Moulding machinery. GWYNDAF WILLIAMS, 57, Nevilles Court, Dollis Hill Lane, London, N.W.12.

"HARMET"—Welding rods. PADLEY & VENABLES, LIMITED, Dominion Steel & Tool Works, Hill Street, Sheffield, 2.

"HYDRA"—Cranes. F. TAYLOR & SONS, (MANCHESTER), LIMITED, 136-140, Bolton Road, Pendleton, Salford, Lancs.

"METINUM"—Aluminium alloys. KRESTA FOUNDRY & ENGINEERING COMPANY, LIMITED, 38, Everton Brow, Liverpool, 3.

"SECO"—Extrusion guns. SELECTION ENGINEERING COMPANY, LIMITED, 6, Woods Mews, Park Lane, London, W.1.

"JIFIT"—Water pipes, and joints and clips therefor. MACSBY TOOLS (B'HAM), LIMITED, 133, Conybere Street, Birmingham, 12.

"DUNCAS"—Metal furniture, etc. F. D. LOMAS & SON, LIMITED, Hawthorne Lodge, Ashley Road, Walton-on-Thames, Surrey.

"SPENSTEAD"—Sand and shot-blast machines and plant, electric dust-removal apparatus and non-electric dust-removal installations, fans, etc. SPENCER & HALSTEAD, LIMITED, Bridge Works, Wakefield Road, Ossett, Yorks.

MIDDLE EAST TIN ALLOCATION

The Ministry of Supply has announced the following breakdown of the 150 tons of tin metal allocated by the Combined Tin Committee in Washington to Middle East territories (excluding Egypt and Iran) for the second half of 1946:—Palestine, 50 tons; Sudan, 10; Syria, 38; Lebanon, 30; Cyprus, 5; Iraq, 12; Egypt, 5 (additional to 175 tons direct allocation).

THE GLOBE SHEET METAL COMPANY, LIMITED, is being wound up voluntarily. Mr. H. M. Mills, 25A, Drake Street, Rochdale, is the liquidator.

OBITUARY

MR. WILLIAM MAIR, manager of Bairds & Scottish Steel, Limited, died on October 21.

MR. JAMES RUSSELL, of George Russell & Company, Limited, cranebuilders, Motherwell, died on October 27

MR. THOMAS YOUNG, chairman of Kerr & Co. (Maryhill), Limited, ironfounders, etc., has died at the age of 82.

MR. JAMES S. GARDNER, of Pearson, Gardner & Lockhart, Limited, gas engineers' merchants and agents, of Glasgow, died on October 22.

MR. ROBERT CAMPBELL STEWART, a director and secretary of William Jacks & Company (Malaya), Limited, died in Singapore on October 22.

MR. WILLIE WOOD, a local director of Thos. W. Ward, Limited, Sheffield, has died suddenly at the age of 62. He was a brother of Mr. George Wood, joint managing director of the company. Mr. W. Wood joined the staff in 1897 and had been in control of non-ferrous metals departments since 1922.

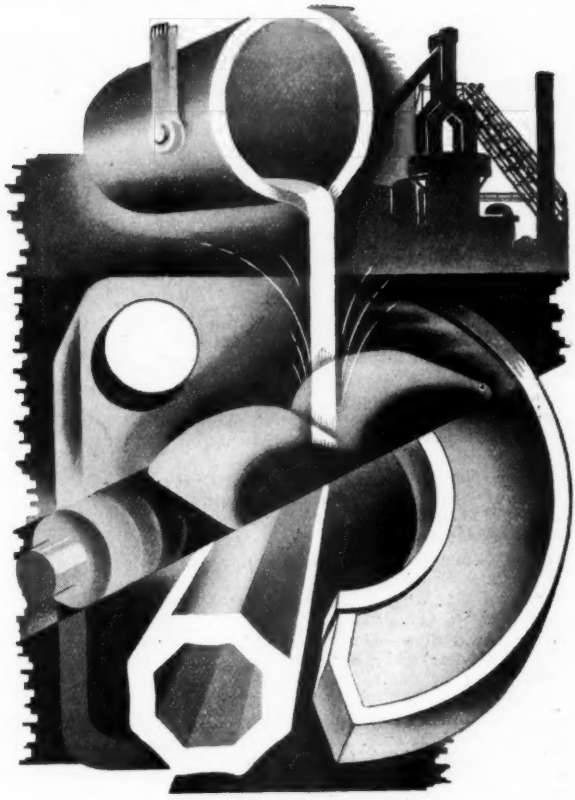
MR. JOHANNES VAN DEN BROEK, who has died at The Hague, was very well known in international tin circles. Born in Haarlem in 1882, he studied mining engineering in the Technical University at Delft, and at the age of 22 entered the service of the Billiton Tin Mining Company. He had experience with this and other mining companies. In October, 1945, he succeeded the late Sir John Campbell as chairman of the International Tin Committee. He was one of the two delegates of the Committee who negotiated the contract with Metals Reserve Company in 1940 by which the United States was able to accumulate large stocks of tin for war purposes.

UNITED KINGDOM TIN POSITION

The Ministry of Supply has released the following figures showing the United Kingdom tin position for the month of September:—

	Ministry.	Consumers.
	Long tons.	Long tons.
TIN METAL:—		
Stocks at September 1	9,267	4,044
Arrivals	—	—
Production	2,507	—
	11,774	4,044
Deliveries:		
To U.K. consumers 2,766	—	2,766
For export 270	3,036	—
		6,810
Consumption	—	2,573
Stocks at September 30	8,738	4,237
TIN ORE (Tin content):—		
Stocks in U.K. at September 1	9,049	
Stocks in U.K. at September 30	8,052	

* Calculated. Reported 3,908 tons.



WORKINGTON FOUNDRY IRONS

Workington Irons, made from particularly pure hematite ores, are esteemed by foundrymen for admixture with other irons to improve the quality and physical properties, especially for ingot mould castings, machine castings, chemical plant, etc. All Workington irons are supplied in machine-cast form, free from sand, saving coke in the cupola, and being most convenient for handling and mixing.

THE UNITED STEEL COMPANIES LTD

WORKINGTON IRON & STEEL COMPANY

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Branch of The United Steel Companies Limited.

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COMPANY RESULTS

(Figures for previous year in brackets.)

Colvilles—Interim dividend of 3% (same).

Barrow Hematite Steel Company—Interim dividend of 5% (nil).

Rio Tinto—Interim dividend of 2½% on the preference shares (same).

Carrier Engineering Company—Net profit, £129,170 (£92,876); to taxation, £45,465 (£30,158); dividend of 35% (25%); forward, £153,029.

R. & W. Hawthorn Leslie & Company—Final dividend of 7% (same) and bonus of 8% (5%), making 19%, including 1%, tax free (15%).

Cakebread, Robey & Company—Interim dividend of 5% (nil). It is stated that this should not be taken as an indication of an increase in the total dividend for the year.

Martin Bros. (Machinery)—Net profit to June 30, £6,501 (£6,550); to reserve for future taxation, £1,000 (nil); dividend of 12½% (same); forward, £27,991 (£27,646).

Ferranti—Net profit to June 30, £77,007 (£95,678); dividend of 6%, tax free (same); to general reserve, £40,000 (£72,817); to contingencies reserve, nil (£5,000); forward, £59,464 (£58,832).

Steel & Company—Net trading profit to March 31, £34,954 (£30,034); to reserve, £10,000 (£10,134); final dividend of 12½% (10%), making 17½% (15%); forward, £19,672 (£15,382).

Arthur Lee & Sons—Final dividend of 25% (same), making 40% (same) and a bonus of 2½%, tax free, from the surplus on the sale of investments and interest on tax reserve certificates (nil).

Linley Engineering Company—Net profit, £4,012 (£5,005); general reserve, £1,250; taxation reserve, £1,951; dividend of 10% (12½%, including bonus of 2½%); forward, £4,229 (£4,657).

Premier Metal Company of South Africa—Profit to June 30, £20,306 (£8,474); tax refund, £7,032 (nil); to taxation 1945-46, £9,716 (£4,622); allowances on orders, nil (£2,659); dividend of 12½% (8¼%); forward, £11,363 (£8,116).

Baldwins (Holdings)—Net revenue for the year ended September 30, £222,947 (£52,972 for nine months); preference dividends, £55,018 (£38,385); ordinary dividend of 10% (7½%) and bonus of 2½% (nil); forward, £70,747 (£74,331).

Aveling-Barford—Net profit, £84,782 (£106,309); provision for tax, £56,000; A.R.P. expenditure written off, £5,199; final dividend of 5%, less tax (5%, tax free), making 10%, less tax (10%, tax free); forward, £42,324 (£48,863).

Electric Furnace Company—Loss to March 31, £31,195 (£1,771); dividend from subsidiary, £4,000 (same); net E.P.T. recoverable, £54,000 (£25,000); dividend of 8% (same); to general reserve, £10,000 (same); forward, subject to directors' fees, £10,467 (£6,762).

Tinsley Rolling Mills Company—Profit for the year ended June 30, £4,961 (£468); British Iron and Steel Federation claim (1945) now received, after tax, £3,492; dividend of 7½% (5%) and centenary bonus of 2½% (nil); to depreciation, £1,000; forward, £10,351 (£8,660).

Indian Iron & Steel Company—Net revenue for the year ended March 31, after taxation, and placing Rs. 15,00,000 (nil) to plant replacement reserve, Rs. 38,20,939 (Rs. 38,33,199); dividend of 15%, free of Indian income-tax (same); forward, Rs. 2,67,617 (Rs. 2,75,532).

W. R. Sykes Interlocking Signal Company—Trading profit to April 30, £9,741 (£33,808); profit on sale of investments, nil (£231); taxation, £4,200 (£28,700); to special reserve, £121 (£2,300); dividend of 6% and bonus of 6% on cumulative "A" preference shares (same); forward, £13,488 (£9,747).

Thos. W. Ward—Trading profit for the year ended June 30, £399,501 (£346,405); other income, £41,259 (£41,807); to depreciation, £48,404 (£47,016); taxation, £226,500 (£201,500); employees' benefit fund, £5,000 (same); net profit, £160,856 (£134,696); final dividend of 6¼%, making 10% (same), and victory bonus of 2½% (nil); to employees' shares dividend, £3,915 (£3,584); to reserve, £35,000 (£25,000); forward, £156,536 (£147,006).

CONTRACTS OPEN

Any date given is the latest on which tenders will be accepted. The address is that from which forms of tender may be obtained.

Depwade, November 20—Provision, trenching for, laying and jointing about 4½ mls. of 5-in., 4-in. and 3-in. cast-iron pipe mains, for the Rural District Council. A. P. I. Cotterell & Son, engineers, 54, Victoria Street, London, S.W.1. (Fee £2 2s., returnable.)

Doncaster, November 20—Construction of approx. 194 yds. of 9-in., 12-in. and 18-in. dia. sewers, for the Borough Council. The Borough Engineer, 2, Priory Place, Doncaster. (Fee £2 2s., returnable.)

Loddon, November 14—Construction of approx. 5,000 yds. of 6-in. dia. stoneware and cast-iron sewers, two pump wells and pump houses, and a sewage disposal works, for the Rural District Council. W. H. Bateman & Partners, consulting engineers, Halifax House, Bank Plain, Norwich. (Fee £5 5s., returnable.)

Magor and St. Mellons, November 11—Construction of about 600 yds. of 15-in., 500 yds. of 12-in. and 300 yds. of 9-in. dia. stoneware and cast-iron pipes, together with manholes, etc., for the Rural District Council. Thomas & Morgan & Partners, engineers, 23, Gelliwastad Road, Pontypridd. (Fee £5 5s., returnable.)

Stockport, November 16—Cast-iron pipes and irregulars and rank and pinion valves, for the Town Council. Mr. H. Russell, secretary, Gas Department, Stockport.

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Raw Material Markets

IRON AND STEEL

Conditions in the foundry industry continue to be very active, particularly in the light section, which has to cope with the huge demand for light castings for housing and other essential requirements. Increased labour is possible at an early date in the foundries, but this will have a reflex action, as it will demand bigger supplies of pig-iron, which will be hard to find. The furnaces already in existence have been successful in increasing the output, but this, at the moment, is only just about keeping pace with the demand. The iron used by this trade is largely high-phosphorus material; other grades of pig-iron used by the general engineering, speciality and jobbing foundries are also being demanded at an increased rate, but there are reasonably good tonnages of hematite and medium- and low-phosphorus iron available at present. There is not quite so much refined pig-iron in stock as there was a few months back, stocks having been cleared for export, and a considerable amount of forward business has been accepted for shipment.

There is a big demand for scrap, both cast iron and steel, and the position generally is fairly satisfactory, although the light foundries are still asking for increased quantities of light and medium cast-iron scrap. No difficulty is experienced by the foundries in securing ferro-alloys, and their requirements in ganister, limestone and firebricks can be met without undue delay. Supplies of foundry coke have now been allocated to foundries in all parts of the country based on last year's tonnages. In some cases this is sufficient for the next few months, but as many foundries have expanded their output since 1945, additional tonnages have been claimed and granted.

All users of billets, sheet bars and blooms are clamouring for supplies, and the Control are very hard pressed to provide the necessary tonnages. Arrangements have been made for increased supplies from the home makers, particularly of billets, but the re-rollers feel the loss of imported tonnages very severely.

There is an enormous amount of work at the plate, section and joist mills, and the utmost difficulty is being experienced by consumers in getting new specifications placed except for delivery in about anything from six to nine months. There is also an exceedingly strong demand for all forms of sheets, common and special grades, as well as galvanised.

NON-FERROUS METALS

No move has been made as yet, but it is felt that the Ministry of Supply may shortly increase the maximum price of copper in this country in order to bring it nearer to the international level. Supplies of the red metal in the United States are rather tight, with the result that exports are restricted.

Mr. Ernest V. Pearce, chairman of Kamunting Tin Dredging, in his address accompanying the annual accounts, says that it is essential, in his opinion, that as soon as the proposed Tin Study Group is formed that consideration be given to action to be taken to prevent surplus tin being thrown on to an unwilling market and depressing the price below economic production cost. Commenting on the results of the recent International Tin Conference, Mr. Pearce says that production is likely to exceed consumption within the next three or four years, perhaps sooner. He feels quite sure the vast majority of the world's producers would have preferred to maintain in being the tin control scheme, modified to give adequate consumer representation.

The American Reconstruction Finance Committee has announced that, with effect from November 1, the export price for grade "A" pig-tin will be 69½ cents per lb., compared with 64 cents previously.

FUEL ECONOMY AT RENISHAW

A practical response to the Government's call for the efficient use of fuel is being made by the Renishaw Iron Company, Limited. Hitherto, the company have used their blast-furnace gas for generating electricity within the works, but, as two furnaces are now in blast, the available gas more than covers local requirements. A 1,000-kw. turbo-generator is to be installed and the electricity generated is to be diverted into the mains of the Derbyshire & Notts Power Company. Thus, the blast-furnace gas will serve the people of North Derbyshire, and at the same time, save coal. Some 7,500,000 units per year will be generated, with a saving of some 5,000 tons of coal at the power company's main generating station at Spondon.

The No. 2 furnace at Renishaw was rebuilt, modernised, and started up in April, since when No. 1 furnace has been overhauled. The ancient ceremony of blessing the furnace was carried out by the Rector of Eckington, when the furnace was blown in on October 23. The combined output of the two units will be about 2,300 tons of pig-iron weekly. According to Stephen Glover's "History of Derbyshire," Renishaw Ironworks were established in 1782 by Thomas Appleby, which makes the plant one of the oldest ironworks in the country.

LEAD CONSUMPTION

The quantity of lead, including virgin metal and lead recovered from scrap, available for distribution in the third quarter of 1946 was 78,875 tons; this was issued as follows:—Cablemaking, 23,750 tons; sheets and pipes, 20,750; batteries, 11,250; oxides (excluding oxide for batteries), 7,000; white lead, 5,500; miscellaneous purposes, 10,625 tons.

THE PRODUCTION ENGINEERING RESEARCH ASSOCIATION, which took up its quarters at Loughborough College in 1939, is being transferred to Staveley Lodge, Melton Mowbray, Leics.